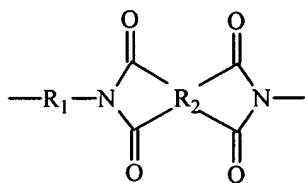


This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

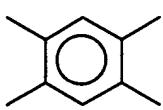
Claim 1 (original) A membrane for gas separation comprising a blend of at least one polymer of a Type 1 copolyimide and at least one polymer of a Type 2 copolyimide in which the Type 1 copolyimide comprises repeating units of formula

I

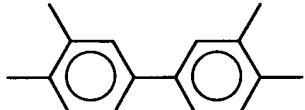


(I)

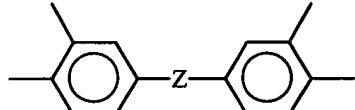
in which R₂ is a moiety having a composition selected from the group consisting of formula A, formula B, formula C and a mixture thereof,



(A)

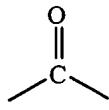


(B)

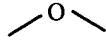


(C)

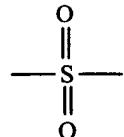
Z is a moiety having a composition selected from the group consisting of formula L, formula M, formula N and a mixture thereof; and



(L)

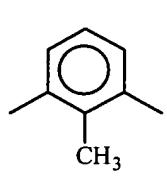


(M)

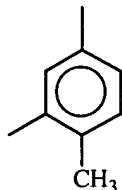


(N)

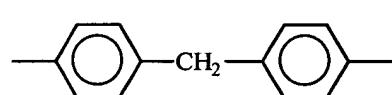
R₁ is a moiety having a composition selected from the group consisting of formula Q, formula S, formula T, and a mixture thereof,



(Q)

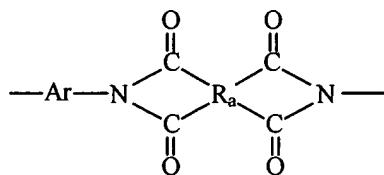


(S)

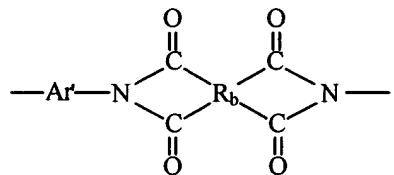


(T)

in which the Type 2 copolyimide comprises the repeating units of formulas IIa and IIb

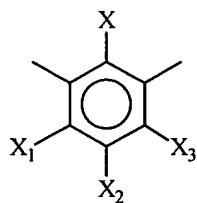


(IIa)

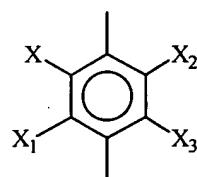


(IIb)

in which Ar is a moiety having a composition selected from the group consisting of formula U, formula V, and a mixture thereof, and

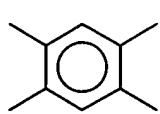


(U)

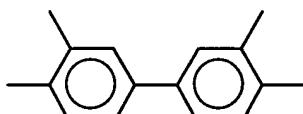


(V)

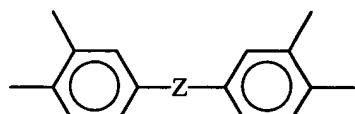
in which X, X₁, X₂, X₃ independently are hydrogen or an alkyl group having 1 to 6 carbon atoms, provided that at least two of X, X₁, X₂, or X₃ on each of U and V are an alkyl group, Ar' is any aromatic moiety, R_a and R_b each independently have composition of formulas A, B, C, D or a mixture thereof, and



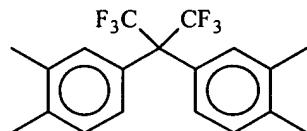
(A)



(B)

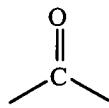


(C)

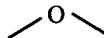


(D)

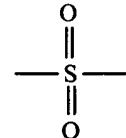
Z is a moiety having composition selected from the group consisting of formula L, formula M, formula N and a mixture thereof.



(L)

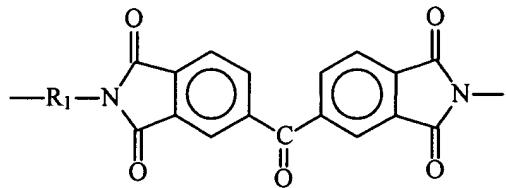


(M)



(N)

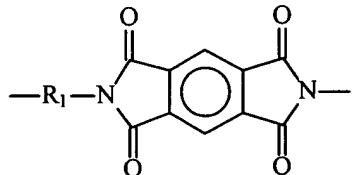
Claim 2 (original) The membrane of claim 1, in which the Type 1 copolyimide comprises repeating units of formula Ia.



(Ia)

Claim 3 (original) The membrane of claim 2, in which R₁ is formula Q in about 16% of the repeating units, formula S in about 64% of the repeating units and formula T in about 20% of the repeating units.

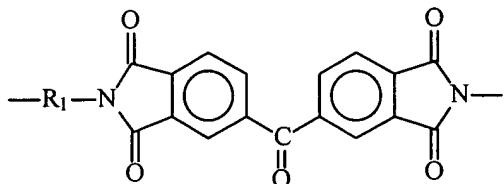
Claim 4 (original) The membrane of claim 1, in which the Type 1 copolyimide comprises repeating units of formula Ib



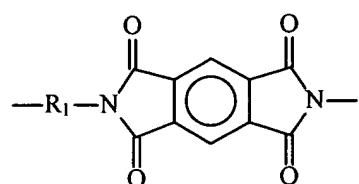
(Ib)

Claim 5 (original) The membrane of claim 4, in which R₁ is a composition of formula Q in about 1-99 % of the repeating units, and of formula S in a complementary amount totaling 100 % of the repeating units.

Claim 6 (original) The membrane of claim 1, in which the Type 1 copolyimide comprises repeating units having composition of formula Ia and repeating units having composition of formula Ib



(Ia)



(Ib)

in which units of formula Ib constitute about 1- 99% of the total repeating units of formulas Ia and Ib, and in which R₁ is a composition of formula Q in about 1-99% of the repeating units, and of formula S in a complementary amount totaling 100% of the repeating units.

Claim 7 (original) The membrane of claim 6, in which the moiety R₁ has a composition of formula Q in about 20% of the repeating units, and of formula S in about 80% of the repeating units, and in which repeating units of formula Ib are about 40% of the total of repeating units of formulas Ia and Ib.

Claim 8 (original) The membrane of claim 1, in which the ratio of Type 1 copolyimide to Type 2 copolyimide is greater than about 0.2.

Claim 9 (original) The membrane of claim 8, in which the ratio of Type 1 copolyimide to Type 2 copolyimide is greater than about 1.0.

Claim 10 (original) The membrane of claim 1, in which repeating units of formula IIa are at least about 25% of the total repeating units of formula IIa and IIb.

Claim 11 (original) The membrane of claim 10, in which repeating units of formula IIa are at least about 50% of the total repeating units of formula IIa and IIb.

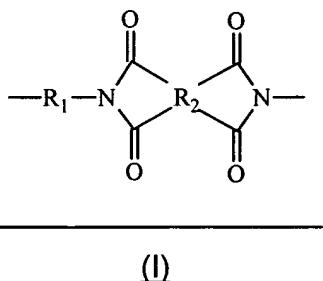
Claim 12 (original) The membrane of claim 1, in which the Type 2 copolyimide is formed by polycondensation of an aromatic amine selected from the group consisting of 2, 4-diaminomesitylene, 3, 7-diamino-2, 8-dimethylidiphenylsulfone and a mixture thereof, and a dianhydride selected from the group consisting of pyromellitic dianhydride, 3, 3', 4, 4'-diphenylsulfone tetracarboxylic dianhydride, 3, 3', 4, 4'-biphenyl tetracarboxylic dianhydride, 4, 4'-(2, 2, 2-trifluoro-1-(trifluoromethyl)ethylidene)bis(1, 2-benzene dicarboxylic acid dianhydride) and a mixture thereof.

Claim 13 (original) The membrane of claim 1, in which the membrane is an asymmetric membrane.

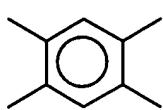
Claim 14 (original) The membrane of claim 13, in which the membrane is a hollow fiber.

Claim 15 (original) A method of separating one or more gases from a gas mixture comprising:

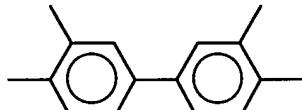
- (a) providing a gas separation membrane comprising a blend of at least one polymer of a Type 1 copolyimide and at least one polymer of a Type 2 copolyimide, in which the Type 1 copolyimide comprises repeating units of formula I



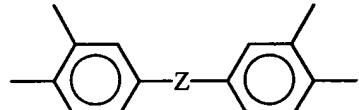
in which R_2 is a moiety having a composition selected from the group consisting of formula A, formula B, formula C, and a mixture thereof,



(A)

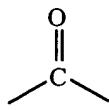


(B)

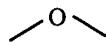


(C)

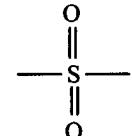
Z is a moiety having a composition selected from the group consisting of formula L, formula M, formula N, and a mixture thereof; and



(L)

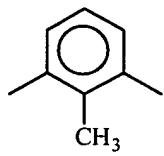


(M)

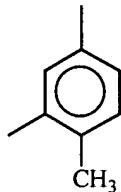


(N)

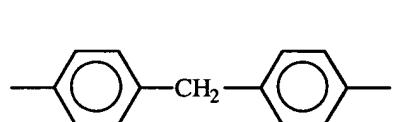
R_1 is a moiety having a composition selected from the group consisting of formula Q, formula S, formula T, and a mixture thereof,



(Q)

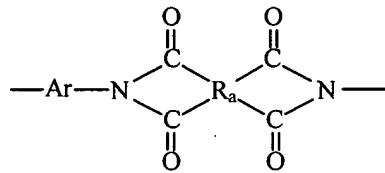


(S)

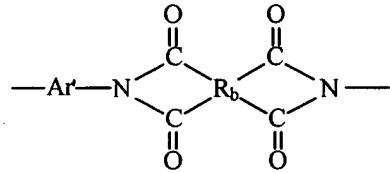


(T)

in which the Type 2 copolyimide comprises the repeating units of formulas IIa and IIb,

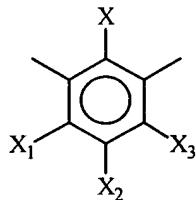


(IIa)

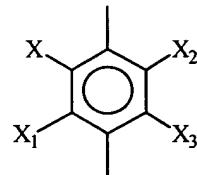


(IIb)

in which Ar is a moiety having a composition selected from the group consisting of formula U, formula V, and a mixture thereof, and

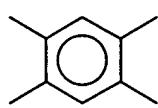


(U)

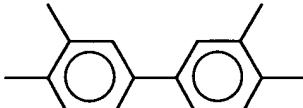


(V)

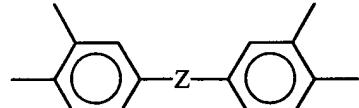
in which X , X_1 , X_2 , X_3 independently are hydrogen or an alkyl group having 1 to 6 carbon atoms, provided that at least two of X , X_1 , X_2 , or X_3 on each of U and V are an alkyl group, Ar' is any aromatic moiety, R_a and R_b , each independently have composition of formulas A, B, C, D or a mixture thereof, and



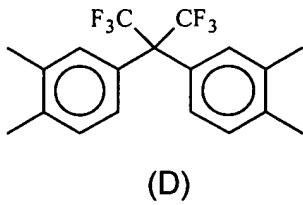
(A)



(B)

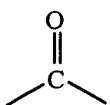


(C)

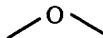


(D)

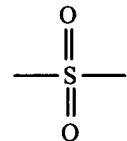
Z is a moiety having composition selected from the group consisting of formula L, formula M, formula N, and a mixture thereof;



(L)



(M)



(N)

- (b) contacting the gas mixture with one side of the gas separation membrane, thereby causing more preferentially permeable gases of the mixture to permeate the membrane faster than less preferentially permeable gases to form a permeate gas mixture enriched in the more preferentially permeable gases on the opposite side of the membrane, and a retentate gas mixture depleted in the more preferentially permeable gases on the one side of the membrane; and
- (c) withdrawing the permeate gas mixture and the retentate gas mixture separately from the membrane.

Claim 16 (canceled)

Claim 17 (original) The method of claim 15, in which the gas mixture comprises carbon dioxide and methane.